

Tropical Alpine Environments has the usual ups and downs associated with multiple authored volumes, perhaps unusually obvious here because of the vast differences in our depth of knowledge concerning the covered topics. All of the chapters are reasonably well written and each has information valuable to those with a direct interest in tropical alpine research. For those who teach plant structure, function, or population dynamics, this book is a treasure of interesting and thought provoking examples to share with students.

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Grasses of the Trans-Pecos and Adjacent Areas. By A. MICHAEL POWELL. Illustrations by PATRICIA R. MANNING. 1994. The University of Texas Press, Austin. xiv + 377 pp. Hardcover \$75.00. ISBN 0-292-76553-3. Paperback \$29.95. ISBN 0-292-765568-8.

Perhaps only in a state as expansive and biologically diverse as Texas is it worthwhile to publish a guide to grasses representing a portion the state. But as Texans can rightly boast, their biodiversity is vast, like the state itself. In *Grasses of the Trans-Pecos and Adjacent Areas* Dr. Powell has provided an attractive and well-written summary of the grasses of the expansive Trans-Pecos region, which will also be useful in southeastern New Mexico and the northern part of Chihuahua, Mexico.

The book treats 268 species and 24 varieties, representing 83 genera, which includes 53 endemic and 83% native taxa. About half of the species known from Texas are excluded (Gould 1975), which will expedite identifications for those working in the Trans-Pecos. The keys to tribes follow Clayton and Renvoize (1986), whereas the arrangement (order of presentation) generally follows Gould (1975). The hardback edition is an ideal size, about 6 by 9 inches, which readily fits into backpacks and attaches. The pages are neither overly cluttered nor have excessive amounts of unused space.

Beyond the *Preface* and *Acknowledgements*, the book has eleven sections. The *Introduction* is a brief overview of the region, including major landforms and climate. Figure 1 illustrates the major physiographic details of the Trans-Pecos, such as counties, mountain ranges, and major municipalities. *Grasses in Perspective* is the most cursory treatment, but will be of interest to non-specialists. *Grasslands* has a valuable discussion of the vegetation of the region, which includes 15 black and white photos. This overview will be particularly useful to those visiting the area for the first time, especially as it covers grasses and non-grasses in the descriptions. Powell has a solid command of regional history, and with more detail than many local treatments discusses how human activity has altered landforms and vegetation types; to my mind this adds significantly to the text. *Morphology of Grasses* presents the additional technical terminology needed to identify grasses. Admirable here is Powell's specific mention of local species to represent various morphological features, and his discussion of the peculiarities of the Paniceae and Andropogoneae, which will almost always confuse those who have not had specific training in agrostology. *Grasses of Trans-Pecos Texas* is a one-page numerical summary of Trans-Pecos grasses, mostly with respect to the grass flora of Texas overall. *Subfamilies, Tribes, and Genera Represented in Trans-Pecos Texas* enumerates the genera (including species number) by subfamily and tribe. Perhaps such information could have been summarized more cryptically but effectively as in Mabberley (1987). The *Key to the Tribes* should not be problematic for those with much experience in grasses. The next 300 pages is *Descriptive Grass Flora*, which provides descriptions of tribes and genera, and keys to species. Species descriptions are lacking, but the keys to species seem to present sufficient information to make identifications with reasonable certainty. Synonymy is excluded except when recent name changes have been invoked, or when there has

been historical dispute about generic boundaries, such as where Powell follows Barkworth and Dewey (1985) in splitting *Elymus* s. l. into several smaller genera. Common names are included, but curious is his citation of known localities without indicating the collector or collection number. We are told in the *Preface*, however, that most grass collections are probably those of B. H. Warnock. In scrutinizing the treatment of *Leptochloa* I found a few oversights. For example, by stating that *Leptochloa dubia* is the only perennial species in North America he has overlooked *L. virgata*. In addition, *L. dubia* can have hairs on the lemma, contrary to his key. His citation of C. Presl as the parenthetical author of *Leptochloa uninervia* should have read J. Presl. It is unfortunate that some regional agrostological treatments have been poorly edited. Careless oversights, for example the reversal of male and female inflorescences of buffalograss (Beetle 1987: 156-157), seem to be lacking. Thus, if *Leptochloa* is indicative of most genera, one need not worry about the overall reliability of the information in the present volume. The *Glossary* consists of approximately 250 entries. The *Literature Cited* is current and generally well chosen, although significant monographs (e.g., Peterson & Annable, 1991) are sometimes not cited immediately following the generic descriptions, where that information might be most useful. The volume closes with an *Index* that includes scientific and common names.

At least one species per genus is illustrated. As a general comment, I would prefer that authors be more careful in reproducing illustrations from Hitchcock (1951), since many are of dubious quality. For example, *Leptochloa uninervia* and *L. fascicularis* have much better illustrations in Correll and Correll (1972). Powell has taken an intermediate approach, using some from Hitchcock (1951) and others by Patricia Manning drawn for this volume.

Powell intended to produce a book useful to "non-scientist and scientist alike", and in my opinion he succeeded. In summary, this is a worthwhile volume, but the prices are somewhat high. My hunch is that many colleagues will not pay so much for a regional treatment of a single family. None the less, for those whose research or vacations take them to the Trans-Pecos, Powell's book is definitely recommended. I liked *Grasses of the Trans-Pecos and Adjacent Areas* and commend the author on its overall quality.

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